AMENDMENTS TO THE CLAIMS

1. (currently amended) A composition comprising a fusion protein comprising a functional displayed domain and a functional phycobiliprotein domain incorporated in a functional oligomeric phycobiliprotein, wherein the oligomeric phycobiliprotein provides a fluorescent tag, and further comprises (a) a specific binding moiety selected from a streptavidin biotin-binding moiety, a biotinylated or biotinylatable moiety, and an antigen binding immunoglobulin moiety; or (b) a protease cleavage site between the displayed domain and the phycobiliprotein domain.

2. (original) The composition of claim 1 wherein the phycobiliprotein domain is a natural phycobiliprotein domain.

3. (original) The composition of claim 1 wherein the functional oligomeric phycobiliprotein is an α,β heterodimer.

4. (original) The composition of claim 1 wherein the displayed domain comprises a moiety selected from the group consisting of an affinity tag, an oligomerization moiety, a specific binding moiety, and a signaling moiety.

5. (original) The composition of claim 1 further comprising a specific binding moiety selected from a streptavidin biotin-binding moiety, a biotinylated or biotinylatable moiety, and an antigen binding immunoglobulin moiety.

6. (original) The composition of claim 1 further comprising a linker peptide between the displayed domain and the phycobiliprotein domain.

7. (original) The composition of claim 1 further comprising a protease cleavage site between the displayed domain and the phycobiliprotein domain.

8. (original) The composition of claim 1 wherein the phycobiliprotein domain comprises at least one functionally attached bilin.

9. (original) The composition of claim 1 wherein the displayed domain is refractive to expression in *E. coli*.

10. (currently amended) The composition of claim 1, wherein the displayed domain is ~~substantially~~ transparent to wavelengths of visible light absorbed by phycobiliproteins.

11. (currently amended) The composition of claim 1, wherein the displayed domain is ~~substantially~~ transparent to wavelengths of energy emitted by the phycobiliprotein domain.

12. (original) The composition of claim 1, further comprising a second fluorescent tag which provides intermolecular energy transfer with the phycobiliprotein.

13. (original) The composition of claim 1, further comprising a second fluorescent tag which provides intermolecular energy transfer with the phycobiliprotein, and the second tag comprises a cyanine dye.

14. (original) A functional phycobilisome comprising the fusion protein of the composition of claim 1.

15. (original) A method for making the fusion protein of the composition of claim 1, the method comprising the steps of:

providing a nucleic acid encoding a polypeptide comprising a functional displayed domain and a functional phycobiliprotein domain;

making the polypeptide by expressing the nucleic acid in a cell or cell-free expression system; and

combining the polypeptide with a phycobiliprotein subunit under conditions to form the fusion protein.

16. (original) A method for isolating a functional displayed domain, the method comprising the steps of:

making the fusion protein according to the method of claim 15;

after the combining step, cleaving a peptide bond between the functional displayed domain and the functional phycobiliprotein domain; and separating the functional displayed domain from the functional phycobiliprotein domain.

17. (original) The method of claim 15, wherein the making and combining steps occur in a cell.

18. (original) The method of claim 15, wherein the making and combining steps occur in a cell, and the cell is or is a progeny of a cell which naturally expresses a phycobiliprotein.

19. (original) The method of claim 15, wherein the making and combining steps occur in a cell, and the cell is or is a progeny of a cell which naturally expresses a phycobiliprotein, wherein the cell is a cyanobacterium.

20. (original) The method of claim 15, wherein the making and combining steps occur in a cell, and the cell is or is a progeny of a cell which naturally expresses a phycobiliprotein, wherein the cell is a rhodophyte (red algae).

21. (original) The method of claim 15, wherein the making and combining steps occur in a cell, and the cell is or is a progeny of a cell which naturally expresses a phycobiliprotein, wherein the cell is a cryptomonad.

22. (original) The method of claim 15, wherein the making and combining steps occur in a cell, and the cell is or is a progeny of a cell which naturally expresses a phycobiliprotein, wherein the cell is an Anabaena cell.